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EXAMINER	
MILORD, MARCEAU	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/692,420	Applicant(s) DARABI ET AL.	
	Examiner Marceau Milord	Art Unit 2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 22 November 2004.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-81 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 62-74 is/are allowed.

6)☒ Claim(s) 1-61 and 75-81 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-61, 75-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Degenhardt (US Patent No 5828589) in view of Sorrells et al (US Patent No 6542722 B1) and Gusakov (US Patent No 5451852).

Regarding claim 1, Degenhardt discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

However, Degenhardt does not specifically disclose the feature of a bypass circuit coupled across one of the cascaded filters.

On the other hand, Sorrells et al, from the same field of endeavor, discloses in figure 49, an antenna that receives a signal, which is routed to a filter and an amplifier. In addition, a local oscillator generates an oscillating signal, which is combined, with signal 4911 by mixer 4912. The output of mixer 4912is a signal 4934 which is amplified by an amplifier 4918 and filtered by

a filter 4920. Furthermore, an amplifier 4928 and a filter 4930 ensure that the signal 4936 is at the desired amplitude and frequency (col. 54, lines 24-60).

Gusakov also discloses a control system having a source of control signals and a multi-window electrical signal-tracking filter. The signal tracking filter includes an operational amplifier operating in the non-inverting mode as a high impedance load, with a plurality of input stages cascaded at the input to the operational amplifier, each input stage having both a frequency determining filter portion and an amplitude determining threshold detecting portion. Each input stage defines a "window" of operation, such that the portion of a control signal or the like inputted to the filter which falls within the "window" will be filtered or attenuated thereby, while the portion of the control signal which falls outside of the "window" will pass unaffected through the filter. Cascading of the input stages allows one to customize the portions of the signal to be filtered for any particular application (col. 2, lines 4-60; col. 4, lines 4-63).

Furthermore, Gusakov shows the diodes 10 to 20 control the threshold voltage at which signal current will flow through a filter F1, F2 or bypass a filter entirely. In addition, the signal current will bypass filters F1 and F2, flowing directly through threshold devices T1 and T2 to the input 22 (col. 5, lines 12-66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Gusakov to the modified Sorrels to the system of Sorrels and Degenhardt in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 2, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters wherein the bypass circuit comprises a switch (col. 5, lines 22-50; col. 6, line 2 5- col. 7, line 40).

Regarding claim 3, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters further comprising a plurality of bypass circuits including the bypass circuit, the bypass circuit each being coupled across a different none of the cascaded filters (col. 5,lines 22-50; col. 6, line 2 5- col. 7, line 40).

Regarding claim 4, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters wherein each of the bypass circuits are adapted for individual control (col. 5, lines 22-50; col. 6, line 2 5- col. 7, line 40).

Regarding claim 5, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters wherein the bypass circuits each comprises a switch (col. 6, line 2 5- col. 7, line 40).

Regarding claim 6, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters, wherein the cascaded filters each comprises a biquad filter (col. 6, line 2 5- col. 7, line 40).

Regarding claim 7, Vorenkamp et al as modified discloses a filter circuit (fig. 5),

Regarding claim 2, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters wherein, the cascaded filters each comprises a complex filter (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 8, Degenhardt as modified discloses a filter circuit (figs. 1-2;col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 9, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters wherein the cascaded filters each comprises a pole and a zero (col. 7, line 22- col. 8, line 54).

Regarding claim 10, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the cascaded filters each comprise a complex filter with a pole and a zero (col. 7, line 22- col. 8, line 54).

Regarding claim 11, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters (wherein the cascaded filters each comprises first and second amplifiers each having a feedback loop comprising a feedback resistor and feedback capacitor coupled in parallel (col. 7, line 22- col. 8, line 54).

Regarding claim 12, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein at least one of the feedback resistors is programmable (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 13, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein said at least one programmable feedback resistor comprises a plurality of resistors coupled in series, said plurality of resistors each having a switch coupled there across comprising: a plurality of cascaded filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 14, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein at least one of the feedback capacitors is Programmable (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 15, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters said at least one programmable feedback capacitor

comprises a plurality of capacitors coupled in parallel, said plurality of capacitors each having a switch coupled there across (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 16, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters wherein the cascaded filters each comprises a first cross coupled resistor coupled between an output of the first amplifier and an input of the second amplifier, and a second cross coupled resistor coupled between an output of the second amplifier and an input of the first amplifier (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 17, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters wherein the cascaded filters each comprises a first input resistor coupled to the input of the first amplifier, and a second input resistor coupled to the input of the second amplifier (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 18, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the cascaded filters each comprises an input capacitor having one end coupled to the first input resistor and a second end coupled to the second input resistor (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 19, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein at least one of the capacitors is programmable (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 20, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein said at least one programmable capacitor comprises a plurality of capacitors coupled in parallel, said plurality of capacitors each having a switch coupled there across (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 21, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein at least one the resistor is programmable (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 22, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein said at least one programmable resistors comprises a plurality of resistors coupled in series, said plurality of resistors each having a switch coupled there across (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 23, Degenhardt discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

However, Degenhardt does not specifically disclose a bypass means for bypassing at least one of the cascaded filters.

On the other hand, Sorrells et al, from the same field of endeavor, discloses in figure 49, an antenna that receives a signal, which is routed to a filter and an amplifier. In addition, a local oscillator generates an oscillating signal, which is combined, with signal 4911 by mixer 4912. The output of mixer 4912is a signal 4934 which is amplified by an amplifier 4918 and filtered by a filter 4920. Furthermore, an amplifier 4928 and a filter 4930 ensure that the signal 4936 is at the desired amplitude and frequency (col. 54, lines 24-60).

Gusakov also discloses a control system having a source of control signals and a multi-window electrical signal-tracking filter. The signal tracking filter includes an operational amplifier operating in the non-inverting mode as a high impedance load, with a plurality of input stages cascaded at the input to the operational amplifier, each input stage having both a frequency determining filter portion and an amplitude determining threshold detecting portion. Each input stage defines a "window" of operation, such that the portion of a control signal or the

like inputted to the filter which falls within the "window" will be filtered or attenuated thereby, while the portion of the control signal which falls outside of the "window" will pass unaffected through the filter. Cascading of the input stages allows one to customize the portions of the signal to be filtered for any particular application (col. 2, lines 4-60; col. 4, lines 4-63).

Furthermore, Gusakov shows the diodes 10 to 20 control the threshold voltage at which signal current will flow through a filter F1, F2 or bypass a filter entirely. In addition, the signal current will bypass filters F1 and F2, flowing directly through threshold devices T1 and T2 to the input 22 (col. 5, lines 12-66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Gusakov to the modified Sorrels to the system of Sorrels and Degenhardt in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 24, Degenhardt as modified discloses a filter circuit (figs. 1-2), comprising: a plurality of cascaded filters (510, 512 of fig. 5); wherein the bypass means comprises a switch coupled across one of the cascaded filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 25, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the bypass means comprises a plurality of switches each being coupled across a different one of the cascaded filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 26, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the switches each comprises means for being individually controlled (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 27, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the cascaded filters each comprise a biquad filter (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 28, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the cascaded filters each comprise a complex filter (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 29, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the cascaded filters each comprise means for generating a pole and zero (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 30, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein the cascaded filters each comprises a complex filter, the complex filters each comprising means for generating a pole and zero (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Claims 31-43 contain similar limitations addressed in claims 1-25, and therefore are rejected under a similar rationale.

Regarding claim 44, Degenhardt discloses a filter circuit (figs. 1-2), comprising: a biquad filter (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

However, Degenhardt does not specifically disclose a polyphase filter coupled to the biquad filter

On the other hand, Sorrells et al, from the same field of endeavor, discloses in figure 49, an antenna that receives a signal, which is routed to a filter and an amplifier. In addition, a local oscillator generates an oscillating signal, which is combined, with signal 4911 by mixer 4912.

The output of mixer 4912is a signal 4934 which is amplified by an amplifier 4918 and filtered by a filter 4920. Furthermore, an amplifier 4928 and a filter 4930 ensure that the signal 4936 is at the desired amplitude and frequency (col. 54, lines 24-60).

Gusakov also discloses a control system having a source of control signals and a multi-window electrical signal-tracking filter. The signal tracking filter includes an operational amplifier operating in the non-inverting mode as a high impedance load, with a plurality of input stages cascaded at the input to the operational amplifier, each input stage having both a frequency determining filter portion and an amplitude determining threshold detecting portion. Each input stage defines a "window" of operation, such that the portion of a control signal or the like inputted to the filter which falls within the "window" will be filtered or attenuated thereby, while the portion of the control signal which falls outside of the "window" will pass unaffected through the filter. Cascading of the input stages allows one to customize the portions of the signal to be filtered for any particular application (col. 2, lines 4-60; col. 4, lines 4-63).

Furthermore, Gusakov shows the diodes 10 to 20 control the threshold voltage at which signal current will flow through a filter F1, F2 or bypass a filter entirely. In addition, the signal current will bypass filters F1 and F2, flowing directly through threshold devices T1 and T2 to the input 22 (col. 5, lines 12-66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Gusakov to the modified Sorrels to the system of Sorrels and Degenhardt in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 45, Degenhardt as modified discloses a filter circuit (figs. 1-2), further comprising a plurality of biquad filters including the biquad filter; and a plurality of polyphase filters including the polyphase filter, the biquad filters being intertwined with the polyphase filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 46, Degenhardt as modified discloses a filter circuit (figs. 1-2); further comprising a plurality of bypass circuits each being coupled across a different node of the biquad filters (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 47, Degenhardt as modified discloses a filter circuit (figs. 1-2), wherein each of the bypass circuits is adapted for individual control (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Claims 48-61 contain similar limitations addressed in claims 12-22, and therefore are rejected under a similar rationale.

Regarding claim 75, Degenhardt discloses a method of complex filtering (figs. 1-2) to extract a signal in a frequency spectrum comprising: a plurality of channels), comprising: selecting one of the channels having the signal; rejecting an image of the signal in the selected channel (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

However, Degenhardt does not specifically disclose the step of applying gain to the signal, the applied gain being programmable.

On the other hand, Sorrells et al, from the same field of endeavor, discloses in figure 49, an antenna that receives a signal, which is routed to a filter and an amplifier. In addition, a local oscillator generates an oscillating signal, which is combined, with signal 4911 by mixer 4912. The output of mixer 4912is a signal 4934 which is amplified by an amplifier 4918 and filtered by

a filter 4920. Furthermore, an amplifier 4928 and a filter 4930 ensure that the signal 4936 is at the desired amplitude and frequency (col. 54, lines 24-60).

Gusakov also discloses a control system having a source of control signals and a multi-window electrical signal-tracking filter. The signal tracking filter includes an operational amplifier operating in the non-inverting mode as a high impedance load, with a plurality of input stages cascaded at the input to the operational amplifier, each input stage having both a frequency determining filter portion and an amplitude determining threshold detecting portion. Each input stage defines a "window" of operation, such that the portion of a control signal or the like inputted to the filter which falls within the "window" will be filtered or attenuated thereby, while the portion of the control signal which falls outside of the "window" will pass unaffected through the filter. Cascading of the input stages allows one to customize the portions of the signal to be filtered for any particular application (col. 2, lines 4-60; col. 4, lines 4-63).

Furthermore, Gusakov shows the diodes 10 to 20 control the threshold voltage at which signal current will flow through a filter F1, F2 or bypass a filter entirely. In addition, the signal current will bypass filters F1 and F2, flowing directly through threshold devices T1 and T2 to the input 22 (col. 5, lines 12-66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Gusakov to the modified Sorrels to the system of Sorrels and Degenhardt in order to cascade multiple stages of input filter circuitry to customize the control system for specific frequencies and amplitudes of the signals to be filtered.

Regarding claim 76, Degenhardt as modified discloses a method of complex filtering to extract a signal in a frequency spectrum comprising: a plurality of channels wherein the channel

selection comprises tuning a center frequency of the channel (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 77, Degenhardt as modified discloses a method of complex filtering to extract a signal in a frequency spectrum comprising: tuning a bandwidth of the channel (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 78, as modified discloses a method of complex filtering to extract a signal in a frequency spectrum further comprising introducing a zero to filter a frequency in the selected channel different from a frequency of the signal (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 79, Degenhardt as modified discloses a discloses a method of complex filtering to extract a signal in a frequency spectrum comprising introducing a plurality of zeros each filtering a different frequency in the selected channel, the filtered frequencies each being different from a frequency of the signal (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 80, Degenhardt as modified discloses a method of complex filtering (fig. 5 and fig. 19) to extract a signal in a frequency spectrum wherein the introducing of the zeros comprises programming the number of the zeros introduced (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Regarding claim 81, Degenhardt as modified discloses a method of complex filtering (fig. 5 and fig. 19) to extract a signal in a frequency spectrum wherein the channel selection further comprises programming an order of complex filtering (col. 2, lines 9-44; col. 7, line 22- col. 8, line 54).

Response to Arguments

3. Applicant's arguments with respect to claims 1-61 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 571-272-7853. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MARCEAU MILORD

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